

CLAIMS

What is claimed is:

1 1. A lateral double-diffused metal oxide semiconductor (LDMOS) device comprising:
2 a gate region;
3 a body region under the gate region; and
4 an enhanced drift region under the gate region, whereby the enhanced drift
5 region purposely overlaps the body region.

1 2. The LDMOS device of claim 1 wherein the enhanced drift region purposely
2 overlaps the lateral tail of the body region.

1 3. The LDMOS device of claim 1 which includes a drain region within the enhanced
2 drift region.

1 4. The LDMOS device of claim 3 wherein the gate region includes:
2 a gate; and
3 a gate oxide, the gate oxide includes a field oxide region, the field oxide for
4 reducing the region Miller capacitance and increasing the breakdown voltage between the gate
5 and the drain region of the LDMOS device.

1 5. A lateral double-diffused metal oxide semiconductor (LDMOS) device comprising:
2 a gate region, the gate region including a gate and gate oxide;

3 a body region under the gate region;
4 an enhanced drift region under the gate region whereby the enhanced drift region
5 purposely overlaps the body region; and
6 a drain region within the enhanced drift region.

1 6. The LDMOS device of claim 5 wherein the gate oxide includes a field oxide region.

1 7. The LDMOS device of claim 5 wherein the enhanced drift region purposely
2 overlaps the lateral tail of the body region.

1 8. A method for providing a lower Ron* product LDMOS device comprising the steps
2 of:

3 (a) providing a gate region on a substrate;
4 (b) providing a body region on the substrate underneath the gate region; and
5 (c) providing an enhanced drift region under the gate region wherein an enhanced drift
6 region purposely overlaps the body region.

1 9. The method of claim 8 wherein the gate region is of such a length that the enhanced
2 drift purposely overlaps the body region when the enhanced drift region is implanted in the
3 substrate.

1 10. The method of claim 8 wherein the body region is provided by implanting Boron
2 ions into the substrate.

1 11. The method of claim 10 wherein the enhanced drift region is provided by
2 implanting phosphorous ions that are self-aligned with the gate region into the substrate.

1 12. The method of claim 10 which further includes the step of (d) providing a field
2 oxide region.

1 13. The method of claim 12 wherein the enhanced drift region is not self-aligned
2 with the gate region.

1 14. The method of claim 12 wherein the enhanced drift region is provided before
2 the field oxide region is provided.